

How to save your customer's skin

Don't ignore important cement-burn issues

What is your company doing to prevent cement burns? If the answer to this question is “nothing,” you are at risk of being held liable for chemical burns suffered by the users of your concrete.

In many recent cases, courts have found concrete producers liable for failing to provide an adequate warning of cement-burn hazards.

Types of skin damage

Physicians call cement-related skin problems contact dermatitis, of which there are two types: Irritant and allergic. Irritant contact dermatitis—what most people call a cement burn—is a rash caused by skin contact with a chem-



Drivers should warn workers when they see causes of cement burns, such as failure to wear tall rubber boots.

8 T I P S

Prevent product defects by maintaining forms

Form inventory is one of a precast producer's biggest capital expenses. Careful handling can extend form life, reduce defects and produce quality products to project a good company image.

1. Visually inspect forms' surface condition and plumb, level and weld integrity before each pour. Use a straight edge to detect any surface imperfections. After a long storage period, set up formwork for a “dry run” by setting up cores, outer jackets and top headers, and set locks.

2. Use proper welding and flame cutting techniques when performing repairs. Excessive or poorly distributed heat can deform steel forms. Follow appropriate pre-heating requirements before welding; this is particularly important during winter. Use several evenly spaced holding jigs to prevent buckling and warping. Keep the form in the jig until it cools and all heat-induced stress is relieved.

3. Keep a complete inventory of repair parts to prevent excessive downtime. Prohibit borrowing of hardware among forms.

4. Select the proper type and size of lifting devices for handling. Short chains and cables may buckle or bend long forms. Forms should be completely released from the cast piece, before operators begin their pick.

5. Avoid using “cheater” bars or pipes to lock or unlock forms. Their use may break locks or cause deformation and indicates that the form is in poor condition to begin with and should be discarded.

6. Immediately clean locks, pins, pallets, hardware, as well as form surfaces, joints and seams after removal, while concrete is still green. Steel wool or wire brushes are recommended. Use care when using sanding disks or grinding wheels, and avoid sandblasting. In addition, refrain from using hammers to knock buildup off forms—this causes deformation.

7. Lubricate hinges and locks weekly to keep concrete from lodging in these working parts and causing form deformation and defects.

8. Store all pallets away from traffic areas. For extended outdoor storage, apply a protective rustproofing coating to forms and cover them with a tarp. For even longer-term storage, consider leaving forms on a cast product.

Sources: Denny Anderson, Quinn Machine and Foundry Corp.; National Precast Concrete Association; John Koski, “Tips for Prolonging Form Life,” Concrete Journal, March 1995, pp. 228-229.

ical or substance that causes direct injury to skin cells. The alkalinity, abrasiveness and hygroscopic nature of wet concrete can cause irritant contact dermatitis. This skin problem is preventable by training people working with concrete to use safe work practices and appropriate personal-protective equipment.

Allergic contact dermatitis is a rash caused by skin contact with a chemical substance that penetrates the skin and triggers an allergic reaction. Between 5% and 15% of workers exposed to wet concrete may be very sensitive to chemical compounds in the concrete, primarily hexavalent chromium.

Allergic contact dermatitis is a serious medical problem and is much more difficult to control than irritant dermatitis. According to medical experts, treatments for allergic contact dermatitis have limited success. Some experts have proposed removing hexavalent chromium from portland cement as a solution, but attempts to do this in the United States have encountered numerous difficulties. Changing the allergic worker's job assignment may be the only solution in some cases.



Prolonged skin contact with wet concrete can cause severe chemical burns. Producers can help prevent these burns by educating workers in the use of personal-protective equipment.

The producer's role in prevention

What should ready-mixed concrete producers do to prevent cement burns and minimize the risk of being held liable in cement burn litigation?

Adequate product warnings are required under various federal laws and regulations including the Consumer Product Safety Act, the Federal Hazardous Substance Act (FHSA) and the Hazard Communication standard of the Occupational Safety and Health Act. As NRMCA's legal coun-

sel points out: "No warning can immunize a company from litigation. Nonetheless, an adequately designed warning would alert users of ready-mixed concrete to the potential dangers, may reduce the number of injuries and should reduce the risk of litigation losses. At the very least, an adequate warning would satisfy federal requirements and strengthen a company's position under state common-law standards."

You should have a program and procedures for warning concrete users that contact with the product can cause injury. Give contractors the necessary Material Safety Data Sheets (MSDSs). Make sure concrete delivered to homeowners and other casual consumers has cautionary labeling required by FHSA. The Consumer Product Safety Commission (CPSC) agrees with the industry's practice of providing cautionary labeling on a bill of sale, delivery ticket or other document presented to the purchaser. (The CPSC-approved warning is shown in the related article.) Note that this warning requires the concrete user to convey the warning to all persons who come in

What's an adequate warning?

NRMCA Director of Government Affairs Julie Luther has been working with U.S. Consumer Product Safety Commission compliance officer Mary Toro to answer this question. Toro recommends the following labeling:

**WARNING: INJURIOUS TO EYES
CAUSES SKIN IRRITATION
READ THIS WARNING BEFORE USING
Contains Portland Cement**

Contact with wet (unhardened) concrete, mortar, cement or cement mixtures can cause skin irritation, severe chemical burns or serious eye damage. Avoid contact with eyes and skin. Wear waterproof gloves, a fully buttoned long-sleeved shirt, full-length trousers and tight-fitting eye protection when working with these materials. If you have to stand in wet concrete, use waterproof boots that are tight at tops and high enough to keep concrete from flowing into them. If you are finishing concrete, wear knee pads to protect knees. Wash wet concrete, mortar, cement or cement mixtures from your skin with fresh, clean water immediately af-

ter contact. Indirect contact through clothing can be as serious as direct contact, so promptly rinse out wet concrete, mortar, cement or cement mixtures from clothing. Seek immediate medical attention if you have persistent or severe discomfort. In case of eye contact, flush with plenty of water for at least 15 minutes. Consult a physician immediately. **KEEP OUT OF THE REACH OF CHILDREN.**

USER AGREES TO CONVEY THIS WARNING TO ALL PERSONS WHO MAY PURCHASE, USE OR COME IN CONTACT WITH WET (UNHARDENED) CONCRETE, MORTAR, CEMENT OR CEMENT MIXTURES.

Toro adds: "The commission staff takes the position that the required cautionary labeling may be provided on a bill of sale, delivery ticket or other document presented to the purchaser provided it is conspicuous and states the name and address of the seller ... The failure to provide the above cautionary labeling for ready-mixed concrete delivered to the household for consumer users is a violation of the Federal Hazardous Substances Act."

contact with the wet concrete.

Many ready-mixed concrete producers have cement-burn prevention programs that go beyond the required warnings. Some producers give customers brochures that contain more detailed information on safe use of concrete. Others use brochures and videotapes to conduct training sessions for contractor personnel. Brochures and videotapes are available from NRMCA and the Portland Cement Association.

Also train your mixer drivers to properly deliver warnings to customers and to report unsafe customer work practices to the appropriate person in your company. One company has empowered its drivers to terminate a delivery if warnings aren't heeded and unsafe work practices continue.

Don't wait to take action

Too many producers show little interest in cement-burn prevention because they've never encountered the problem. This is a shortsighted approach. We urge any producers who take the threat of cement burns lightly to talk with producers who have seen such injuries and experienced a lawsuit. Such conversations will help them realize the value of a cement-burn prevention program that can save their customer's skin as well as their own.

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Buffering solution available

A granulated product added to the cleanup bucket used to rinse finishers' hands and tools may help to control irritant and allergic contact dermatitis. Adding the granules reportedly reduces washwater pH, keeping it in a safe range even if 5 pounds of raw cement accumulate in a 5-gallon bucket. Tests commissioned by the manufacturer also indicate that hexavalent chromium is reduced by 50% when the granules are added.

Besides protecting workers' hands, the product can be used to neutralize alkalinity on other skin areas in contact with wet concrete. The manufacturer recommends that workers immediately remove any clothing saturated with wet concrete, then spray a 1.5% solution of the product on affected skin areas. However, workers shouldn't rinse or spray skin areas that are cut, blistered or inflamed. And if skin irritation develops or continues after use, consult a physician.

PUBLICATION #J970695
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